

What Is Claimed Is:

1. An image processing device for converting an electronic document into an image signal for visualizing the electronic document, comprising:

an electronic document color temperature information recognition part which recognizes color temperature information of the electronic document; and

a color correction conversion part which carries out color conversion from the electronic document into an image signal for visualizing an image having substantially the same color as the electronic document based on the color temperature information of the electronic document recognized by the electronic document color temperature information recognition part.

2. The image processing device according to claim 1, wherein the device comprises, as the color correction conversion part, a first color correction conversion part which carries out color conversion from the electronic document into an image signal which can be output to an output device for producing a recorded product based on the color temperature information of the electronic document recognized by the electronic document color temperature information recognition part to ensure that when the recorded product having an image corresponding to the electronic document formed thereon is observed under an illumination light source having a color temperature indicated by the color temperature information of the electronic document, the recorded product assumes substantially the same color as the electronic document.

3. The image processing device according to claim 1 wherein, as the color correction conversion part, the device comprises a second color correction conversion part which carries out color conversion from the electronic document into an image signal which can be output to a display device based on the color temperature information of the electronic document recognized by the electronic document color temperature information recognition part to ensure that a display image is displayed in substantially the same color as the electronic document at a color temperature indicated by the color temperature information of the electronic document irrespective of setting of the color temperature of a light source for illuminating the display device and therearound.

4. An image processing device for converting an electronic document into an image signal which can be output to a display device, comprising:

an electronic document color temperature information recognition part which recognizes color temperature information of the electronic document;

a recorded product observation light source color temperature information recognition part which recognizes the color temperature information of a light source for observing a recorded product corresponding to the electronic document;

a third color correction conversion part which carries out color conversion from the electronic document into an image signal having substantially the same color as the recorded product under the light source for observing the recorded product corresponding to the electronic document

based on the color temperature information of the electronic document recognized by the electronic document color temperature information recognition part and the color temperature information of the light source for observing the recorded product recognized by the recorded product observation light source color temperature information recognition part; and

a second color correction conversion part which carries out color conversion from the image signal converted by the third color correction conversion part into an image signal which can be output to the display device based on the color temperature information of the light source for observing the recorded product recognized by the recorded product observation light source color temperature information recognition part to ensure that a display image is displayed in substantially the same color as the image signal converted by the third color correction conversion part irrespective of setting of the color temperature of the light source for illuminating the display device and therearound.

5. An image processing device for converting an electronic document into an image signal which can be output to an output device for producing a first recorded product corresponding to the electronic document, the image processing device comprising:

an electronic document color temperature information recognition part which recognizes color temperature information of the electronic document;

a recorded product observation light source color temperature information recognition part which recognizes color temperature information of a light source for observing a second recorded product corresponding to the electronic document but having different

reproducibility from the first recorded product;

a third color correction conversion part which carries out color conversion from the electronic document into an image signal having substantially the same color as the second recorded product under the light source for observing the second recorded product corresponding to the electronic document based on the color temperature information of the electronic document recognized by the electronic document color temperature information recognition part and the color temperature information of the light source for observing the second recorded product recognized by the recorded product observation light source color temperature information recognition part; and

a first color correction conversion part which carries out color conversion from the image signal whose color has been converted by the third color correction conversion part into an image signal which can be output to the output device for producing the first recorded product based on the color temperature information of the light source for observing the second recorded product recognized by the recorded product observation light source color temperature information recognition part to ensure that when the first recorded product having different reproducibility from the second recorded product is observed under an illumination light source having a color temperature indicated by the color temperature information of the electronic document, the first recorded product assumes substantially the same color as the image signal whose color has been converted by the third color correction conversion part.

6. The image processing device according to claim 2, wherein the first color correction conversion part comprises:

a color conversion coefficient storage part which stores at least one color conversion coefficient;

a color conversion coefficient management part which selects an appropriate color conversion coefficient from the color conversion coefficient storage part based on the color temperature information of the electronic document obtained by the electronic document color temperature information recognition part or creates a new color conversion coefficient from the at least one color conversion coefficient stored in the color conversion coefficient storage part; and

a color conversion part which carries out color conversion from the electronic document into an image signal which can be output to the output device using the color conversion coefficient selected or created by the color conversion coefficient management part.

7. The image processing device according to claim 2, wherein the first color correction conversion part comprises:

a common color temperature conversion coefficient storage part which stores at least one color conversion coefficient;

a common color temperature conversion coefficient management part which selects an appropriate color conversion coefficient from the common color temperature conversion coefficient storage part based on the color temperature information of the electronic document obtained by the electronic document color temperature information recognition part or creates a new color conversion coefficient from the at least one color conversion coefficient stored in the common color temperature conversion coefficient storage part;

a common color temperature conversion part which carries out

color conversion from the electronic document into the image signal having a common color temperature using the color conversion coefficient selected or created by the common color temperature conversion coefficient management part; and

a common color conversion part which carries out color conversion from the image signal having the common color temperature into an image signal which can be output to the output device using a color conversion coefficient corresponding to the common color temperature which is targeted when color conversion is carried out by the common color temperature conversion part.

8. The image processing device according to claim 3, wherein the second color correction conversion part comprises:  
a color conversion coefficient storage part which stores at least one conversion coefficient;

a color conversion coefficient management part which selects an appropriate color conversion coefficient from the color conversion coefficient storage part based on the color temperature information of the electronic document obtained by the electronic document color temperature information recognition part or creates a new color conversion coefficient from the at least one color conversion coefficient stored in the color conversion coefficient storage part; and

a color conversion part which carries out color conversion from the electronic document into an image signal which can be output to the display device using the color conversion coefficient selected or created by the color conversion coefficient management part.

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9. The image processing device according to claim 3, wherein  
the second color correction conversion part comprises:  
a common color temperature conversion coefficient storage part  
which stores at least one color conversion coefficient;  
a common color temperature conversion coefficient management  
part which selects an appropriate color conversion coefficient from the  
common color temperature conversion coefficient storage part based on the  
color temperature information of the electronic document obtained by the  
electronic document color temperature information recognition part or  
creates a new color conversion coefficient from the at least one color  
conversion coefficient stored in the common color temperature conversion  
coefficient storage part;  
a common color temperature conversion part which carries out  
color conversion from the electronic document into an image signal having a  
common color temperature using the color conversion coefficient selected or  
created by the common color temperature conversion coefficient  
management part; and  
a common color conversion part which carries out color conversion  
from the image signal having the common color temperature into an image  
signal which can be output to the display device using a color conversion  
coefficient corresponding to the common color temperature which is  
targeted when color conversion is carried out by the common color  
temperature conversion part.

10. The image processing device according to claim 4, wherein  
the third color correction conversion part comprises:  
a recorded product simulating color conversion coefficient storage

part which stores at least one color conversion coefficient;  
a recorded product simulating color conversion coefficient management part which selects an appropriate color conversion coefficient from the recorded product simulating color conversion coefficient storage part based on the color temperature information of the electronic document obtained by the electronic document color temperature information recognition part and the color temperature information of a light source for observing a recorded product corresponding to the electronic document obtained by the recorded product observation light source color temperature information recognition part or creates a new color conversion coefficient from the at least one color conversion coefficient stored in the recorded product simulating color conversion coefficient storage part; and

a recorded product simulating color conversion part which carries out color conversion from the electronic document into an image signal having substantially the same color as the recorded product under the light source for observing the recorded product corresponding to the electronic document using the color conversion coefficient selected or created by the recorded product simulating color conversion coefficient management part, and

the second color correction conversion part comprises:  
a color conversion coefficient storage part which stores at least one color conversion coefficient;

a color conversion coefficient management part which selects an appropriate color conversion coefficient from the display device color conversion coefficient storage part based on the color temperature information of the light source for observing the recorded product corresponding to the electronic document obtained by the recorded product

observation light source color temperature information recognition part or creates a new color conversion coefficient from the at least one color conversion coefficient stored in the color conversion coefficient storage part; and

a color conversion part which carries out color conversion from the image signal having substantially the same color as the recorded product under the light source for observing the recorded product corresponding to the electronic document into an image signal which can be output to the display device using the color conversion coefficient selected or created by the color conversion coefficient management part.

11. The image processing device according to claim 4, wherein the third color correction conversion part comprises:

a recorded product simulating color conversion coefficient storage part which stores at least one color conversion coefficient;

a recorded product simulating color conversion coefficient management part which selects an appropriate color conversion coefficient from the recorded product simulating color conversion coefficient storage part based on the color temperature information of the electronic document obtained by the electronic document color temperature information recognition part and the color temperature information of a light source for observing a recorded product corresponding to the electronic document obtained by the recorded product observation light source color temperature information recognition part or creates a new color conversion coefficient from the at least one color conversion coefficient stored in the recorded product simulating color conversion coefficient storage part; and

a recorded product simulating color conversion part which carries

out color conversion from the electronic document into an image signal having substantially the same color as the recorded product under the light source for observing the recorded product using the color conversion coefficient selected or created by the recorded product simulating color conversion coefficient management part, and

the second color correction conversion part comprises:

a common color temperature conversion coefficient storage part which stores at least one color conversion coefficient;

a common color temperature conversion coefficient management part which selects an appropriate color conversion coefficient from the common color temperature conversion coefficient storage part based on the color temperature information of the light source for observing the recorded product corresponding to the electronic document obtained by the recorded product observation light source color temperature information recognition part or creates a new color conversion coefficient from the at least one color conversion coefficient stored in the common color temperature conversion coefficient storage part;

a common color temperature conversion part which carries out color conversion from the image signal having substantially the same color as the recorded product under the light source for observing the recorded product corresponding to the electronic document into an image signal having a common color temperature using the color conversion coefficient selected or created by the common color temperature conversion coefficient management part; and

a common color conversion part which carries out color conversion from the image signal having the common color temperature into an image signal which can be output to the display device using a color conversion

coefficient corresponding to the common color temperature which is targeted when color conversion is carried out by the common color temperature conversion part.

12. The image processing device according to claim 5, wherein the third color correction conversion part comprises:
  - a recorded product simulating color conversion coefficient storage part which stores at least one color conversion coefficient;
  - a recorded product simulating color conversion coefficient management part which selects an appropriate color conversion coefficient from the recorded product simulating color conversion coefficient storage part based on the color temperature information of the electronic document obtained by the electronic document color temperature information recognition part and the color temperature information of the light source for observing the second recorded product corresponding to the electronic document obtained by the recorded product observation light source color temperature information recognition part or creates a new color conversion coefficient from the at least one color conversion coefficient stored in the recorded product simulating color conversion coefficient storage part; and
  - a recorded product simulating color conversion part which carries out color conversion from the electronic document into an image signal having substantially the same color as the second recorded product under the light source for observing the second recorded product corresponding to the electronic document using the color conversion coefficient selected or created by the recorded product simulating color conversion coefficient management part, and
- the first color correction conversion part comprises:

a color conversion coefficient storage part which stores at least one color conversion coefficient;

a color conversion coefficient management part which selects an appropriate color conversion coefficient from the color conversion coefficient storage part based on the color temperature information of the electronic document obtained by the electronic document color temperature information recognition part or creates a new color conversion coefficient from the at least one color conversion coefficient stored in the color conversion coefficient storage part; and

a color conversion part which carries out color conversion from the image signal having substantially the same color as the second recorded product under the light source for observing the second recorded product corresponding to the electronic document into an image signal which can be output to the output device using the color conversion coefficient selected or created by the color conversion coefficient management part.

13. The image processing device according to claim 5, wherein the third color correction conversion part comprises:

a recorded product simulating color conversion coefficient storage part which stores at least one color conversion coefficient;

a recorded product simulating color conversion coefficient management part which selects an appropriate color conversion coefficient from the recorded product simulating color conversion coefficient storage part based on the color temperature information of the electronic document obtained by the electronic document color temperature information recognition part and the color temperature information of the light source for observing the second recorded product corresponding to the electronic

document obtained by the recorded product observation light source color temperature information recognition part or creates a new color conversion coefficient from the at least one color conversion coefficient stored in the recorded product simulating color conversion coefficient storage part; and

a recorded product simulating color conversion part which carries out color conversion from the electronic document into an image signal having substantially the same color as the second recorded product under the light source for observing the second recorded product corresponding to the electronic document using the color conversion coefficient selected or created by the recorded product simulating color conversion coefficient management part, and

the first color correction conversion part comprises:

a common color temperature conversion coefficient storage part which stores at least one color conversion coefficient;

a common color temperature conversion coefficient management part which selects an appropriate color conversion coefficient from the common color temperature conversion coefficient storage part based on the color temperature information of the electronic document obtained by the electronic document color temperature information recognition part or creates a new color conversion coefficient from the at least one color conversion coefficient stored in the common color temperature conversion coefficient storage part;

a common color temperature conversion part which carries out color conversion from the image signal having substantially the same color as the second recorded product under the light source for observing the second recorded product corresponding to the electronic document into an image signal having a common color temperature using the color conversion

coefficient selected or created by the common color temperature conversion coefficient management part; and

a common color conversion part which carries out color conversion from the image signal having the common color temperature into an image signal which can be output by the output device using a color conversion coefficient corresponding to the common color temperature which is targeted when color conversion is carried out by the common color temperature conversion part.

14. The image processing device according to claim 4, wherein the second color correction conversion part further comprises:

a document faithful reproduction part which carries out color conversion from the electronic document into the image signal which can be output to the display device to ensure that the image is displayed in substantially the same color as the electronic document at a color temperature indicated by the color temperature information of the electronic document based on the color temperature information of the electronic document recognized by the electronic document color temperature information recognition part irrespective of setting of the color temperature of the light source for illuminating the display device and therearound; and

a user interface capable of switching between a document faithful reproduction mode for reproducing an image substantially equivalent to the electronic document on the display device using the document faithful reproduction part of the second color correction conversion part and a print simulation mode for reproducing an image substantially equivalent to the recorded product using the third color correction conversion part and the second color correction conversion part when the electronic document is to

be displayed on the display device.

15. The image processing device according to claim 5, wherein  
the first color correction conversion part further comprises a  
document faithful reproduction part which carries out color conversion from  
the electronic document into an image signal which can be output to the  
output device for producing the first recorded product based on the color  
temperature information of the electronic document recognized by the  
electronic document color temperature information recognition part to  
ensure that when the first recorded product having an image corresponding  
to the electronic document formed thereon is observed under an illumination  
light source having the color temperature indicated by the color temperature  
information of the electronic document, the first recorded product assumes  
substantially the same color as the electronic document; and

a user interface capable of switching between a document faithful reproduction mode for reproducing, utilizing the first recorded product, an image substantially equivalent to the electronic document using the document faithful reproduction part of the first color correction conversion part and a print simulation mode for reproducing, utilizing the first recorded product, an image substantially equivalent to the second recorded product using the third color correction conversion part and the first color correction conversion part when the electronic document is to be output to the output device.

16. A computer readable storage medium which stores a program of instructions for causing a computer to execute a function for image processing for converting an electronic document into an image signal for

visualizing the electronic document, the function comprising the steps of:  
recognizing color temperature information of the electronic  
document; and

carrying out color conversion from the electronic document into an  
image signal for visualizing an image having substantially the same color as  
the electronic document based on the recognized color temperature  
information of the electronic document.

17. The computer readable storage medium according to claim 16,  
wherein the color conversion is performed by carrying out first color  
conversion from the electronic document into an image signal which can be  
output to an output device for producing a recorded product based on the  
recognized color temperature information of the electronic document to  
ensure that when a recorded product having an image corresponding to the  
electronic document formed thereon is observed under an illumination light  
source having a color temperature indicated by the color temperature  
information of the electronic document, the recorded product assumes  
substantially the same color as the electronic document.

18. The computer readable storage medium according to claim 16,  
wherein the color conversion is performed by carrying out second color  
conversion from the electronic document into an image signal which can be  
output to a display device based on the recognized color temperature  
information of the electronic document to ensure that a display image is  
displayed in substantially the same color as the electronic document at a  
color temperature indicated by the color temperature information of the  
electronic document irrespective of setting of the color temperature of a

light source for illuminating the display device and therearound.

19. A computer readable storage medium which stores a program of instructions for causing a computer to execute a function for image processing for converting an electronic document into an image signal which can be output to a display device, the function comprising the steps of:

    recognizing color temperature information of the electronic document;

    recognizing color temperature information of a light source for observing a recorded product corresponding to the electronic document;

    carrying out third color conversion from the electronic document into a first image signal having substantially the same color as the recorded product under the light source for observing the recorded product corresponding to the electronic document based on the color temperature information of the electronic document and the color temperature information of the light source for observing the recorded product which have been recognized; and

    carrying out second color conversion from the first image signal into a second image signal which can be output to the display device based on the recognized color temperature information of the light source for observing the recorded product to ensure that a display image is displayed in substantially the same color as the first image signal converted by the third color conversion irrespective of setting of color temperature of the light source for illuminating the display device and therearound.

20. A computer readable storage medium which stores a program of instructions for causing a computer to execute a function for image

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processing for converting an electronic document into an image signal which can be output to an output device for producing a first recorded product corresponding to the electronic document, the function comprising the steps of:

    recognizing color temperature information of the electronic document;

    recognizing the color temperature information of a light source for observing a second recorded product corresponding to the electronic document but having different reproducibility from the first recorded product;

    carrying out third color conversion from the electronic document into a first image signal having substantially the same color as the second recorded product under the light source for observing the second recorded product based on the color temperature information of the electronic document and the color temperature information of the light source for observing the second recorded product which have been recognized; and

    carrying out first color conversion from the first image signal converted by the third color conversion into a second image signal which can be output to the output device for producing the first recorded product based on the recognized color temperature information of the light source for observing the second recorded product to ensure that when the first recorded product having different color reproducibility from the second recorded product is observed under an illumination light source having a color temperature indicated by the color temperature information of the electronic document, the first recorded product assumes substantially the same color as the first image signal converted by the third color conversion.

21. An image processing method for converting an electronic document into an image signal for visualizing the electronic document, comprising the steps of:

recognizing color temperature information of the electronic document; and

carrying out color conversion from the electronic document into an image signal for visualizing an image having substantially the same color as the electronic document based on the recognized color temperature information of the electronic document.

22. The image processing method according to claim 21, wherein first color conversion from the electronic document into an image signal which can be output to an output device for producing a recorded product is carried out based on the recognized color temperature information of the electronic document as the color conversion to ensure that when a recorded product having an image corresponding to the electronic document formed thereon is observed under an illumination light source having a color temperature indicated by the color temperature information of the electronic document, the recorded product assumes substantially the same color as the electronic document.

23. The image processing method according to claim 21, wherein second color conversion from the electronic document into an image signal which can be output to a display device is carried out based on the recognized color temperature information of the electronic document as the color conversion to ensure that a display image is displayed substantially the same color as the electronic document at a color temperature indicated by

the color temperature information of the electronic document irrespective of setting of color temperature of a light source for illuminating the display device and therearound.

24. An image processing method for converting an electronic document into an image signal which can be output to a display device, comprising the steps of:

recognizing color temperature information of the electronic document;

recognizing color temperature information of a light source for observing a recorded product corresponding to the electronic document;

carrying out third color conversion from the electronic document into a first image signal having substantially the same color as the recorded product under the light source for observing the recorded product corresponding to the electronic document based on the color temperature information of the electronic document and the color temperature information of the light source for observing the recorded product which have been recognized; and

carrying out second color conversion from the first image signal converted by the third color conversion into a second image signal which can be output to a display device based on the recognized color temperature information of the light source for observing the recorded product to ensure that a display image is displayed in substantially the same color as the first image signal converted by the third color conversion irrespective of setting of color temperature of the light source for illuminating the display device and therearound.

25. An image processing method for converting an electronic document into an image signal which can be output to an output device for producing a first recorded product corresponding to the electronic document, comprising the steps of:

recognizing color temperature information of the electronic document;

recognizing color temperature information of a light source for observing a second recorded product corresponding to the electronic document but having different reproducibility from the first recorded product;

carrying out third color conversion from the electronic document into a first image signal having substantially the same color as the second recorded product under the light source for observing the second recorded product corresponding to the electronic document based on the color temperature information of the electronic document and the color temperature information of the light source for observing the second recorded product which have been recognized; and

carrying out first color conversion from the first image signal converted by the third color conversion into a second image signal which can be output to the output device for producing the first recorded product based on the recognized color temperature information of the light source for observing the second recorded product to ensure that when the first recorded product having different color reproducibility from the second recorded product is observed under an illumination light source having a color temperature indicated by the color temperature information of the electronic document, the first recorded product assumes substantially the same color as the first image signal converted by the third color conversion.